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Edited by: Jane Walters

U.S. DEPARTMENT OF COMMERCE
National Bureau of Standards
National Engineering Laboratory
Center for Electronics and Electrical Engineering
Semiconductor Electronics Division
Gaithersburg, MD 20899

February 1987

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SEMICONDUCTOR MEASUREMENT TECHNOLOGY: A BIBLIOGRAPHY OF NBS PUBLICATIONS FOR THE YEARS 1962-1986

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U.S. DEPARTMENT OF COMMERCE, Malcolm Baldrige, *Secretary*
NATIONAL BUREAU OF STANDARDS, Ernest Ambler, *Director*

SEMICONDUCTOR MEASUREMENT TECHNOLOGY

Publications for the Years 1962-1986

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SEMICONDUCTOR MEASUREMENT TECHNOLOGY;

LIST OF PUBLICATIONS – 1962-1986

Introduction

This list of publications contains reports of work performed at the National Bureau of Standards (NBS) in the field of Semiconductor Measurement Technology. The publications are grouped by author in a given year, with the current year appearing first in the listing. An index by topic area is provided. Each topic is followed by year and reference number of the appropriate publication. For the reader's convenience, a list by author is also given.

Most of the publications listed herein resulted from work carried out as part of the NBS Semiconductor Technology Program (STP). This Program serves to focus NBS research on improved measurement technology for the use of the semiconductor device community in specifying materials, equipment, and devices in national and international commerce, and in monitoring and controlling device fabrication and assembly. This research leads to carefully evaluated, well-documented measurement methods, data, reference artifacts, models and theory, and associated technology which when applied by the industry are expected to contribute to higher yields, lower cost, and higher reliability of semiconductor devices and to provide a basis for controlled improvements in fabrication processes and device performance. By providing a common basis for the purchase specifications of government agencies, improved measurement technology also leads to greater economy in government procurement. Financial support of the Program is provided by a variety of Federal agencies; sponsorship is acknowledged in each report.

The work of the Semiconductor Technology Program is carried out by the Semiconductor Electronics Division (formerly the Semiconductor Materials & Processes and the Semiconductor Devices & Circuits Divisions). Inquiries regarding the work of the Division should be directed to Frank F. Oettinger, Division Chief, Room B344, Technology Building, National Bureau of Standards, Gaithersburg, MD 20899.

The linewidth metrology work, formerly a part of the Semiconductor Materials & Processes Division, is now part of the Precision Engineering Division of the Center for Manufacturing Engineering, although those publications that pertain to the semiconductor industry still appear in this report. Detailed inquiries may be made to Robert D. Larrabee, Group Leader, Linewidth Metrology, Room A331, Technology Building, National Bureau of Standards, Gaithersburg, MD 20899.

How to Obtain Listed Publications

In most cases, reprints of articles in technical journals may be obtained on request to the author or to the above address. Copies of most NBS Technical Notes and Special Publications, NBS Interagency Reports (NBSIR Series), NBS Grant-Contract Reports (NBS-GCR Series), and other Government reports may be ordered through the National Technical Information Service (NTIS), U.S. Department of Commerce, Springfield, VA 22161; or from the Government Printing Office (GPO), Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Current price information may be obtained from the NTIS Order Desk, (703) 487-4650 or from the GPO Order and Inquiry Section, (202) 783-3238.

Progress Briefs

Progress Briefs have been issued in the NBSIR Series to describe the work in the Semiconductor Technology Program on a periodic basis and also to list new reports as they become available. The Center for Electronics and Electrical Engineering (CEEE) continues to publish such material in a Center-wide publication, CEEE Technical Progress Bulletin. All individuals on the present Progress Briefs mailing list will continue to receive issues in that series. Requests to have names placed on this list should be sent to: Mr. J. F. Mayo-Wells, CEEE, Room B358, Metrology Building, National Bureau of Standards, Gaithersburg, MD 20899, telephone: (301) 975-2220.

Videotapes

The videotape on Safe Operating Area Limits for Power Transistors, by David L. Blackburn, continues to be available. Address requests to the author, Room B310, Technology Building, for a copy of the tape and NBS Special Publication 400-44 (issued September 1977), the videotape script.

Also available is the videotape on Laser Scanning of Active Semiconductor Devices. Contact David W. Berning, Room B310, Technology Building, concerning a copy of the videotape and NBS Special Publication 400-27 (issued February 1976).

PROGRESS REPORTS

Comprehensive progress reports covering the period July 1, 1968 through June 30, 1973 were published as NBS Technical Notes with the title, Methods of Measurement for Semiconductor Materials, Process Control, and Devices:

QUARTER ENDING	NBS TECHNICAL NOTE	DATE ISSUED
September 30, 1968	472	Dec 1968
December 31, 1968	475	Feb 1969
March 31, 1969	488	Jul 1969
June 30, 1969	495	Sep 1969
September 30, 1969	520	Mar 1970
December 31, 1969	527	May 1970
March 31, 1970	555	Sep 1970
June 30, 1970	560	Nov 1970
September 30, 1970	571	Apr 1971
December 31, 1970	592	Aug 1971
March 31, 1971	598	Oct 1971
June 30, 1971	702	Nov 1971
September 30, 1971	717	Apr 1972
December 31, 1971	727	Jun 1972
March 31, 1972	733	Sep 1972
June 30, 1972	743	Dec 1972
September 30, 1972	754	Mar 1973
December 31, 1972	773	Jun 1973
March 31, 1973	788	Aug 1973
June 30, 1973	806	Nov 1973

Between July 1, 1973 and September 30, 1977, comprehensive progress reports were issued in the NBS Special Publication 400– subseries with the title, Semiconductor Measurement Technology:

QUARTER ENDING	NBS SPECIAL PUBLICATION	DATE ISSUED
September 30, 1973	400–1	Mar 1974
December 31, 1973	400–4	Nov 1974
March 31, 1974		
June 30, 1974	400–8	Feb 1975
September 30, 1974	400–12	May 1975
December 31, 1974	400–17	Nov 1975
March 31, 1975	400–19	Apr 1976
June 30, 1975		
September 30, 1975	400–25	Oct 1976
December 31, 1975		

QUARTER ENDING	NBS SPECIAL PUBLICATION	DATE ISSUED
March 31, 1976	400–29	Apr 1977
June 30, 1976		
September 30, 1976	400–36	Jul 1978
December 31, 1976	400–38	Nov 1979
March 31, 1977		
June 30, 1977	400–45	Aug 1980
September 30, 1977		

After October 1, 1977, brief progress reports were issued as NBSIRs with the title, Semiconductor Technology Program, Progress Briefs:

QUARTER ENDING	NBSIR	DATE ISSUED
December 31, 1977	78–1444	Mar 1978
March 31, 1978	78–1444–2	Jul 1978
June 30, 1978	78–1444–3	Oct 1978
September 30, 1978	79–1591	Jan 1979
December 31, 1978	79–1591–2	Mar 1979
March 31, 1979	79–1591–3	Jun 1979
June 30, 1979	79–1591–4	Aug 1979
September 30, 1979	79–1591–5	Dec 1979
December 31, 1979	80–2006	Apr 1980
March 31, 1980	80–2006–2	Jun 1980
June 30, 1980	80–2006–3	Oct 1980
September 30, 1980	80–2006–4	Dec 1980
December 31, 1980	81–2230	Mar 1981
March 31, 1981	81–2230–2	Jul 1981
June 30, 1981	81–2230–3	Oct 1981
July 1, 1981	83–2636	Jan 1983
September 30, 1982		

The Center for Electronics and Electrical Engineering Technical Progress Bulletins (TPB), which appeared after October 1, 1982, contain abstracts of recent publications, and of those to be published, covering work of the Semiconductor Technology Program as well as that of the Signals and Systems Metrology Program.

QUARTER ENDING	NBSIR	DATE ISSUED
December 31, 1982	83–2719–3	Jul 1983
March 31, 1983	84–2857–1	Mar 1984
June 30, 1983	84–2857–2	Apr 1984
September 30, 1983	84–2857–3	Apr 1984
December 31, 1983	84–2857–4	Apr 1984
March 31, 1984	84–2877–1	May 1984

QUARTER ENDING	NBSIR	DATE ISSUED
June 30, 1984	84–2877–2	Jul 1984
September 30, 1984	84–2877–3	Dec 1984
December 31, 1984	85–3181	Jun 1985
March 31, 1985	85–3181–2	Aug 1985
June 30, 1985	85–3181–3	Dec 1985
September 30, 1985	86–3344	Mar 1986
December 30, 1985	86–3344–2	Jun 1986
March 31, 1986	86–3449	Sep 1986

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